

## CLAIMS:

1. An electrophoretic display device comprising electrophoretic particles (6), an array of display elements comprising a pixel electrode and a counter electrode between which a portion of the electrophoretic particles (6) are present, and control means for supplying one or more potentials differences (R, Gs, Ps) to the electrodes during a transition  
5 period to bring the display elements in a predetermined optical state (B, Lg, Dg, W) from a previous optical state to produce an image change wherein the control means for supplying one or more potential differences to the electrodes are arranged such that the one or more potential differences to bring the display elements in a predetermined optical state to produce an image on the display device end for substantially all elements of the array within a time  
10 spread period ( $\Delta t$ ) less than 75%/2 of the maximum transition period ( $\Delta t < 0.375t_{\max}$ ).
2. An electrophoretic display device as claimed in claim 1, wherein the time spread period is less than 25% of the maximum transition period ( $\Delta t < 0.25t_{\max}$ ).
- 15 3. An electrophoretic display device as claimed in claim 2, wherein the time spread period is a frame time or less.
4. An electrophoretic display device as claimed in claim 1, wherein the control means for supplying one or more potential differences to the electrodes are arranged such that  
20 the final grey scale determining potential difference of the one or more potential differences to bring the display elements in a predetermined optical state to produce an image on the display device substantially occur at the same instance ( $t_{\text{sychrone}}$ ) for substantially all elements of the array ( $\Delta t \approx 0$ ).
- 25 5. An electrophoretic display device as claimed in claim 1, wherein the control means are arranged for controlling the one or more potential differences of each of the plurality of picture elements
  - to be a reset potential difference (R) having a reset value and a reset duration during a reset period,

- and subsequently
- to be a grey scale potential difference (Gs) for enabling the particles to occupy the position corresponding to image information.

5 6. An electrophoretic display device as claimed in claim 5, wherein the control means are arranged for applying an over-reset potential.

7. An electrophoretic display device as claimed in claim 5, wherein the control means are arranged for synchronizing the end of the reset potential differences (R).

10

8. An electrophoretic display device as claimed in claim 5, wherein the control means are arranged for applying in between the reset potential differences and the grey scale potential differences preset potential differences.

15 9. A method for driving an electrophoretic display device comprising:  
an electrophoretic medium (5) comprising charged particles (6);

- a plurality of picture elements (2), in which method one or more potential differences (R, Gs, Ps) are applied to elements of the display device to bring the elements within a transition period in a predetermined optical state from a previous optical state to

20 effect a change in the displayed image, wherein

- application of the one or more potential differences substantially end within a time period ( $\Delta t$ ) less than 75%/2 of the maximum transition period ( $\Delta t < 0.375 t_{\max}$ ).

10. A method as claimed in claim 9, wherein to bring an element to a

25 predetermined optical state from a previous optical state a reset potential difference (R) followed by a grey scale potential difference is applied, and for substantially all elements in the array application of the final grey scale determining potential difference (R, Gs) occurs at substantially the same instance ( $t_{\text{synchronize}}$ ) ( $\Delta t \approx 0$ ).